AMENDMENT & RESPONSE UNDER 37 C.F.R. § 1.116 - EXPEDITED PROCEDURE

Serial Number: 09/476,219

Filing Date: December 30, 1999

Title: NON-LINEAR ADAPTIVE VOLTAGE POSITIONING FOR DC-DC CONVERTERS

Page 2 Dkt: 884.182US1

the voltage is at a minimum current voltage level when the current drawn is at a minimum but nonzero load current level.

- 2. The method of claim 1, further comprising adjusting the voltage provided from the DC-DC converter to provide a substantially linear voltage response with respect to current drawn between the maximum load current level and the minimum load current level.
- 3. The method of claim 1, further comprising adjusting the voltage provided from the DC-DC converter such that the voltage is at the minimum current voltage level when the current drawn is below the minimum load current level.
- 4. The method of claim 1, wherein the minimum load current level is the minimum current drawn by a known load device having a minimum current draw of greater than no current.
- 5. The method of claim 1, wherein the minimum load current level is a selected current level between but not including no current and the maximum load current level.
- 6. The method of claim 1, wherein sensing a current drawn from the DC-DC converter comprises sensing the voltage across a current sensing resistor connected in series with an output of the DC-DC converter.
- 7. A method of providing a voltage from a DC-DC converter such that the voltage provided varies dependent on the current drawn from the DC-DC converter, comprising: sensing an output current drawn from the DC-DC converter; converting the sensed output current to a voltage signal indicating the sensed output current;

adjusting the voltage signal indicating the sensed output current such that the voltage is at a minimum level when the current drawn is at a maximum load current level and the voltage is at a maximum level when the current drawn is at a minimum but nonzero load current level; and adding the adjusted voltage signal to the voltage provided by the DC-DC converter.

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Page 3 Dkt: 884.182US1

8. A method of providing a voltage from a DC-DC converter such that the voltage provided varies dependent on the current drawn from the DC-DC converter, comprising: sensing an output current drawn from the DC-DC converter; converting the sensed output current to a voltage signal indicating the sensed output

converting the sensed output current to a voltage signal indicating the sensed output current;

adjusting the voltage signal indicating the sensed output current such that the voltage is at a maximum current voltage level when the current drawn is at a maximum load current level and the voltage is at a minimum current voltage level when the current drawn is at a minimum but nonzero load current level; and

subtracting the adjusted voltage signal from the voltage provided by the DC-DC converter.

## 9. A DC-DC converter, comprising:

a module operable to sense a current drawn from the DC-DC converter and further operable to adjust the voltage provided from the DC-DC converter such that the voltage is at a maximum current voltage level when the current drawn is at a maximum load current level and the voltage is at a minimum current voltage level when the current drawn is at a minimum but nonzero load current level.

- 10. The DC-DC converter of claim 9, wherein adjusting the voltage in response to the sensed current is performed via hardware.
- 11. The DC-DC converter of claim 9, wherein adjusting the voltage in response to the sensed current is performed via software executing on a processor.
- 12. The DC-DC converter of claim 9, wherein sensing a current drawn from the DC-DC converter comprises measuring the voltage across a current sensing resistor connected in series with an output of the DC-DC converter.



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Page 4 Dkt: 884.182US1

- 13. The DC-DC converter of claim 9, wherein the module is further operable to provide a substantially linear voltage response with respect to current drawn between the maximum load current level and the minimum load current level.
- 14. The DC-DC converter of claim 9, wherein the module is further operable to provide a voltage at the minimum current voltage level when the current drawn is below the minimum load current level.
- 15. The DC-DC converter of claim 9, wherein the minimum load current level is the minimum current drawn by a known load device having a minimum current draw of greater than no current.
- 16. The DC-DC converter of claim 9, wherein the minimum load current level is a selected current level between but not including no current and the maximum load current level.

## REMARKS

Applicant has carefully reviewed and considered the final Office Action mailed on April 11, 2001, and the references cited therewith.

No claims are amended, cancelled, or added; as a result, claims 1-16 are now pending in this application.

## Rejections Under 35 U.S.C.§102

Claims 1-16 were rejected under 35 U.S.C.§102(e) as being fully anticipated by either Hsu et al. (U.S. Patent No. 5,999,433) or Buono (U.S. Patent no. 5,949,222).

Anticipation under 35 U.S.C §102 requires the disclosure in a single prior art reference of each element of the claim under consideration (*In re Dillon* 919 F.2d 688, 16 USPQ2d 1897, 1908 (Fed. Cir. 1990) (en banc), cert. denied, 500 U.S. 904 (1991)). The Examiner has failed to show in any Office Action how either the Hsu or Buono references cited contain any specific elements corresponding to claimed elements of the present invention. More specifically, the Examiner has failed to show that the adjusting element or module of the pending claims that